IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Comer, et al.	Examiner:	Feild J.
Serial No.:	09/728,000	Group Art Unit:	2176
Filed:	December 1, 2000	Docket:	MS39124.2/40062.117USRE

Title: METHOD AND APPARATUS FOR SUGGESITNG COMPLETIONS FOR A PARTIALLY ENTERED DATA ITEM BASED ON PREVIOUSLY-ENTERED, ASSOCIATED DATA ITEMS

#20 SC 3/13/03

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By: Charlene Huffman
Name: Charlene Huffman

Commissioner for Patents
Washington, D.C. 20231

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By:
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Name: Charlene Huffman

APPEAL BRIEF TO THE BOARD OF PATENT APPEALS AND INTERFERENCES

Assistant Commissioner for Patents
Washington, D.C. 20231

This brief is presented in support of the Notice of Appeal filed on January 6, 2003, from the Final Rejection of claims 1-60 of the above identified reissue application, as set forth in the Final Office Action mailed September 6, 2002, and subsequent Advisory Action mailed December 4, 2002.

The Appeal Brief is filed in triplicate. A check in the amount of $320.00 is enclosed for the requisite fee set forth in 37 C.F.R. § 1.17(c). Please charge any additional fees or credit any overpayment to Merchant & Gould P.C., Deposit Account No. 13-2725. Appellant respectfully requests reversal of the Examiner's rejection of pending claims 1-60.

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Real Party in Interest

The present reissue application relates to U.S. Patent No. 5,845,300, which patent has been assigned to Microsoft Corporation, a corporation organized and existing under and by virtue of the laws of the State of Washington, and having an office and place of business at One Microsoft Way, Redmond, Washington 98052, in an assignment recorded in the United States Patent and Trademark Office at Reel 8087, Frame 0791.

Related Appeals and Interferences

There are no other appeals or interferences known to appellant that would have a bearing on the Board's decision in the present appeal.

Status of the Claims

The present reissue application added (by preliminary amendment) new claims 39-60 to original claims 1-38 of U.S. Patent No. 5,845,300 ("the '300 Patent"). Claims 1-60 of the reissue application stand rejected as being based upon a defective declaration under 35 U.S.C. § 251. The nature of the defect is that appellant is allegedly attempting to recapture subject matter surrendered during prosecution of the '300 Patent. Thus, the Examiner has stated that "no reissuable error has been identified." See Final Office Action (9/6/02) at 3.

Although the Examiner rejected the new claims 39-60 in light of the recapture bar in a first Office Action mailed November 7, 2001, appellant successfully overcame the recapture rejection in its Response dated February 6, 2002. See Office Action (5/6/02) allowing claims 1-60. However, in response to appellant's submission of the original copy of the '300 Patent, the Examiner withdrew the allowance of claims 1-60 in a Final Office Action mailed September 6, 2002. Specifically, the Final Office Action relied on a recent Federal Circuit decision, Pannu v. Storz Instruments, Inc., 59 U.S.P.Q.2d 1597 (2001), to again reject all the claims 1-60 based on the recapture bar.

The Final Office further notes at p. 4 that claims 1-60 "contain allowable subject matter based on the prior art of record" and that "if applicant overcomes the recapture

bar, the case can pass to issue." Thus, claims 1-60 are not rejected in light of any prior art but rather stand rejected based solely on an allegedly defective declaration due to the recapture bar. The claims on appeal (all of the claims 1-60) are set forth in Appendix A, where the new claims added by the reissue application are underlined. Additionally, claims 39, 58 and 60 were previously amended to fix a typographical error and to address an earlier concern by the Examiner that the number "N" had to be an integer greater than zero. These amendments occurred prior to the Final Office Action and were accepted by the Examiner.

Status of the Amendments

In response to the Final Office Action, appellant filed an after-final response presenting many of the recapture arguments found below. There were **no proposed amendments** to the claims presented in the after-final response. In an Advisory Action mailed December 4, 2002, the Examiner indicated these arguments did not place the application in condition for allowance.

Summary of the Invention

The present invention describes a method and apparatus for automatically completing data entries, such as in a table, a database or a spreadsheet, by providing a suggested completion of a partial data entry as a user types. This "automatic completion" invention is sometimes referred to as AutoComplete, and is graphically demonstrated in the series of screenshots shown in FIGS. 3a-3j of the '300 Patent. Specifically, using the spreadsheet example, when a user begins to edit a cell within the spreadsheet, a completed data item list is generated from the previously entered data items stored in cells associated with the edited cell. As the user enters characters into the cell, the completed data item list is searched for an entry corresponding to the partial data entry in the edited cell. If a qualifying match is found, then the data item is displayed as a suggested completion within the cell being edited. The user then has the opportunity to accept the suggested completion and thereby accelerate the data entry process, to enter additional characters to define a new data entry in the spreadsheet, or to reject the

suggested completion. By accepting the suggested completion, the benefit of increasing the speed of data entry is realized and the integrity of the entered data is assured (i.e., the data entry is in conformance with previously entered data). The present invention thus improves the efficiency and reliability of data entry (such as in a spreadsheet) by providing the ability for an automatic completion feature that utilizes a list of completed data items stored in cells associated with a cell being edited.

As noted above, the "completed data item list" is based on "previously entered data items" that are "associated" with the cell that is being edited. In other words, the list of "completed data items" that is checked to determine if there is a matching AutoComplete entry is based on a particular "search region" that is associated with the active cell. As noted in the following section, it is the composition of this recited "search region" (i.e., the cells that are included within the search region for the AutoComplete feature) that is at the core of the recapture argument in this appeal.

Issue

The issue on appeal is whether appellant is entitled through the current broadening reissue application to alter the scope of the "search region" recited in the newly added independent claims 39, 57 and 59. Specifically, during the original prosecution of the '300 Patent, claim 1 of the application was amended after a final rejection to include only one specific example of a variety of different "search regions" that were defined in the specification of the '300 Patent (see issued claim 1 reproduced below). The present reissue application seeks to add new independent claims that are essentially identical to issued claim 1, but which substitute alternative "search region" definitions for the single preferred embodiment found in claim 1.

The Examiner correctly notes that the addition of the specific "search region" in issued claim 1 of the '300 Patent was relied upon to overcome a prior art rejection and thereby gain allowance of the claim after the final rejection. However, the proposed reissue claims all recite alternative "search regions" and thus provide for a narrower claim scope relative to the scope of the original (canceled) claim 1. Thus, the issue on appeal is whether appellant is entitled to broadening reissue claims where the specific

limitation added to gain allowance of the claims during the original prosecution of the '300 Patent is replaced with alternative limitations found in the specification, and where the reissue claims are all narrower in scope than originally canceled claims. The Examiner considers such new claims to be barred by the recapture rule, while appellant respectfully disagrees for the reasons noted below.

Grouping of the Claims

The claims do not stand or fall together. Specifically, original claims 1-38 of the '300 Patent should be grouped separately from new claims 39-60 added by the reissue application since it is only the new claims 39-60 that have been argued to violate the recapture rule.

Argument

I. The Different "Search Regions" Described In U.S.P.N. 5,845,300

Before addressing the specific recapture argument as detailed in the Office Actions, it is important to understand the scope of the invention disclosed in the '300 Patent. While the above summary of the invention describes that the recited AutoComplete feature relies on searching a list of completed data items to determine whether there is a potential match to the item that is currently being input by a user, it does not detail the different specific "search regions" described in the patent specification. In particular, the specification describes a preferred embodiment of the "search region" as follows:

> As mentioned previously, the list of completed data items is formed from a set of cells associated with the active cell. As will be described in more detail below, AutoComplete as implemented in the preferred embodiment, defines associated cells as including the set of cells that: share the same column as the active cell; extend above and below the active cell; and are bordered by "white space". ('300 Patent, col. 12, lines 16-22.)

However, the '300 Patent specifically describes a host of alternative search regions, and specifically notes that others skilled in the art may identify even more search regions:

> Therefore, the preferred embodiment defines associated data items as those that are adjacent and share a common column. Other mechanisms, algorithms or decision rules can be used to define associated data items and the embodiment illustrated by this example should not limit the scope of AutoComplete. Those skilled in the art will appreciate that definitions such as: adjacent elements in a common row; elements that are within a range of N cells from the active cell; all data items in a column; all data items in a row; all data items in a spreadsheet; all data items formatted in a particular manner (i.e., bolded, underlined, italicized, etc.); and other similar methods can be used for determining which data items are associated. ('300 Patent, col. 12, lines 34-46.)

Thus, the '300 Patent describes a multitude of different "search regions" that may be used to define potential matches for the AutoComplete feature, including items in the same column, the same row and/or within N cells from the active cell.

II. Prosecution History of U.S.P.N. 5,845,300

The Examiner's recapture argument is based on certain amendments made during the original prosecution of the '300 Patent. Namely, claim 1 as originally filed did not specifically define any particular search region, opting instead to broadly recite an "association" to the active cell. Claim 1 as originally presented with the application for the '300 Patent is included below in its entirety (emphasis added):

> 1. A method for completing a data entry for an active cell of a spreadsheet having a plurality of cells arranged in a grid of rows and columns, comprising the steps of:
>
> **generating a list of completed data items from a range of said cells having an association with said active cell;**
>
> defining a partial data entry within said active cell;
>
> searching said list of completed data items to identify a suggested completion comprising said partial data entry; and
>
> in response to identifying said suggested completion, displaying said suggested completion within said active cell.

During prosecution, claim 1 was rejected under 35 U.S.C. § 103 as obvious over Smith, Do It Yourself Databases, MacUser, v.9, n.11, p.126(8), 11/93 in view of certain other references. Specifically, the Examiner cited the Smith reference as showing the operation of generating a list of completed data items by searching the database for previous entries. (See Paper No. 5 from the original prosecution history of the '300 Patent.) Although the original prosecuting attorney maintained that Smith did not describe "generating a list" (but rather simply searched an entire database), claim 1 was later amended in response to a Final Office Action to add a specific reference to a search region. In particular, claim 1 was amended to add the following recitation: "identifying a list of data items from a search region within said spreadsheet comprising a table of contiguous data-containing cells encompassing said active cell and bordered by empty cells." (See Amendment B, Paper No. 8 from the original prosecution history of the '300 Patent at 2.) Claim 1 as issued in the '300 Patent is reproduced below in its entirety (emphasis added):

> 1. A method for completing a partial data entry for an active cell of a spreadsheet having a plurality of cells defining a grid of rows and columns, comprising the steps of:
>
> invoking an edit mode for said active cell;
>
> **identifying a list of completed data items from a search region within said spreadsheet comprising a table of contiguous data-containing cells encompassing said active cell and bordered by empty cells**;
>
> defining a partial data entry within said active cell;
>
> identifying a matching completed data item from within said list of completed data items that corresponds to said partial data entry;
>
> displaying said matching completed data item as a suggested completion for said partial data entry;
>
> receiving an acceptance command in association with said suggested completion; and
>
> in response to said acceptance command, storing said partial data entry with said suggested completion within the active cell.

The original prosecuting attorney relied on the added limitation (shown in bold above) to distinguish claim 1 over the prior art Smith reference:

> The search region, as recited by [amended] claim 1, comprises a table of contiguous data-containing cells

encompassing the active cell and bordered by empty cells. The Smith reference does not describe searching a database using an active cell's physical association to other data items within the database, but rather, searches the entire database of previously entered data items. As a result, the search region for an active cell has no defined boundary parameters. All previously entered database items are considered to be associated with an active cell. (Paper No. 8 from the original prosecution history of the '300 Patent at 13.)

However, as noted in Section I. above, the limitation added after the final rejection represented only one of many different "search regions" described in the specification. Indeed, it was this "mistake" (i.e., reciting only one of the potential search regions in the amended claim 1) that constitutes the error on which the present reissue application is based.

III. The New Reissue Claims

The present reissue application does not seek to amend claim 1 of the '300 Patent, but rather adds new independent claims 39, 57 and 59 which each recite different alternative search regions as described in the specification of the '300 Patent (see Section I. above). While all the reissue claims are presented in Appendix A below, a copy of representative claim 57 is reproduced below in its entirety (emphasis added):

> 57. A method for completing a partial data entry for an active cell of a spreadsheet having a plurality of cells defining a grid of rows and columns, the method comprising:
>
> invoking an edit mode for the active cell;
>
> **identifying a list of completed data items from a search region within the spreadsheet, said search region including cells within the same column as the active cell;**
>
> defining a partial data entry within the active cell;
>
> identifying a matching completed data item from within said list of completed data items that corresponds to said partial data entry;
>
> displaying said matching completed data item as a suggested completion command for said partial data entry;
>
> receiving an acceptance command in association with said suggested completion; and
>
> in response to said acceptance command, storing said partial data entry with said suggested completion within the active cell.

As can be seen by comparing new claim 57 to claim 1 of the '300 Patent above, the only change relates to the scope of the "search region" recited in the bolded element. Specifically, while claim 1 describes the "preferred embodiment" of the search region ('300 Patent, col. 12, lines 18-22), new claim 57 recites one of the alternative search regions described in the specification ('300 Patent, col. 12, lines 34-46). Similarly, new independent claims 39 and 59 recite other alternate search regions described in the specification.

While the new independent claims of the reissue application arguably make for a "broadening reissue," such claims are allowed where the reissue application is filed within two years of the issue date of the parent application. The present reissue application was filed two years after the issue date of the '300 Patent. Furthermore, while the test for a broadening reissue is whether the new or amended reissue claims are broader than the claims of the **issued** patent, this is not the test for recapture as described in the following section.

IV. The Recapture Rule Does Not Apply In This Case

A. Introduction

The Examiner apparently takes the position that the recapture rule bars the present reissue claims because appellant is allegedly "estopped from attempting to recapture the precise limitation he added to overcome prior art rejections." (Final Office Action at 6.) The quoted language is in apparent reference to the fact that, during the original prosecution, appellant added a reference to a specific "search region" and is now attempting to remove that particular reference in the new reissue claims. However, what the Examiner fails to understand is that appellant is not attempting to entirely remove the reference to the search region (i.e., the "identifying step") in the new claims, but rather is simply substituting alternative search regions within the same "identifying step."

Thus, appellant is not attempting to "recapture" (i.e., delete) the precise limitation relied on for allowance of claim 1. Rather, appellant is simply including alternative

versions of the limitation, all of which are narrower in scope than the original (rejected) claim of the parent application.

B. The Law of Recapture

As noted in Ball Corp. v. U.S., 221 U.S.P.Q. 289, 295 (Fed. Cir. 1984):

> The recapture rule bars the patentee from acquiring, through reissue, claims that are of the same or of broader scope than those claims that were canceled from the original application. On the other hand, the patentee is free to acquire, through reissue, claims that are narrower in scope than the canceled claims. If the reissue claims are narrower than the canceled claims, yet broader than the original patent claims, reissue must be sought within 2 years after grant of the original patent.

Thus, the determination that must be made in this instance is whether the reissue claims are of the same or broader scope than the canceled claims of the original application. See MPEP § 1412.02 which cites Ball for the above proposition and notes that the "patentee is free to acquire, through reissue, claims that are narrower in scope in all aspects than claims canceled from the original application." See also, 4 Chisum on Patents, § 15.03[2][e] at 74-75:

> Under the "recapture" doctrine, the deliberate surrender of a claim to certain subject matter during the original prosecution of the application for a patent is not such "error" as will allow the patentee to obtain or "recapture" that subject matter in a reissue. **However, a patentee may obtain on reissue a claim that varies materially from the claim originally surrendered even though it omits a limitation intentionally added to obtain issuance of the patent.** (Emphasis added.)

The above quote from Chisum precisely describes the circumstances of the present reissue application. In particular, appellant is not attempting through the present reissue claims to recapture the scope of original claim 1 that only required an "association" between the completed data items and the active cell. Rather, the present reissue claims (i.e., independent claims 39, 57 and 59) each define alternative "boundary parameters" for the search region consisting of either a column, a row or other specific regions of the spreadsheet containing the active cell. Thus, it is clear that each of the reissue claims is narrower in scope than original claim 1 (i.e., the "canceled claim") since the reissue claims all limit the search region to a defined boundary that is narrower than

"the entire database of previously entered data items." Furthermore, the Examiner apparently agrees that the reissue claims are narrower than the original (canceled) claims since the Examiner has indicated in the Final Office Action that the reissue claims are allowable over the prior art of record.

C. The Final Rejection

While arguments similar to those above initially convinced the Examiner to drop the recapture rejections and allow the claims, the Examiner later withdrew the allowance and issued a Final Office Action citing the case of Pannu v. Storz Instruments, Inc., 59 U.S.P.Q.2d 1597 (Fed. Cir. 2001). Specifically, the Examiner cited Pannu for the proposition that an inventor "is estopped from attempting to recapture the precise limitation he added to overcome prior art rejections." Id. at 1601. However, this general statement, while undoubtedly true, is inapplicable to the present reissue claims, and the Pannu case is easily distinguished based on its facts.

Specifically, in Pannu, a shape limitation of one element of an intraocular lens was added during the original patent prosecution to overcome cited prior art. In a later reissue application, the Applicant successfully deleted this shape limitation while adding new limitations to other elements of the claims. The Federal Circuit found that "the reissued claims were not narrowed in any material respect compared with their broadening." Id. at 1601. Indeed, the quote that was included by the Examiner in the Final Office Action is more instructive once it is placed in context as below:

> In prosecuting the '855 patent, Pannu specifically limited the shape of the haptics to a "continuous, substantially circular arc." On reissue, he is estopped from attempting to recapture the precise limitation he added to overcome prior art rejections. Id.

Thus, the Applicant in Pannu added a shape restriction to overcome a prior art reference in the prosecution of the original patent and then completely removed that shape restriction in the reissue claims. Thus, the Pannu reissue claims were just as broad as the original application claims (with respect to the shape of the lens element) and the Court correctly found recapture in that case.

D. The Pannu Case Does Not Apply to the Present Reissue Claims

The recapture doctrine is usually described only in reported decisions where a reissue applicant has made numerous amendments to the claim language, some arguably broadening the original application claims while others arguably narrowing the original claims. These complicated factual situations can make it difficult to fully understand the application of the recapture rule, although there are several guidelines that have been established by the Federal Circuit to provide clarity. See In re Clement, 45 U.S.P.Q.2d 1161, 1165 (Fed. Cir. 1997) which describes different categories of reissue claims and their applicability to the recapture doctrine:

> From the results and reasoning of those cases, the following principles flow: (1) if the reissue claim is as broad as or broader than the canceled or amended claim in all aspects, the recapture rule bars the claim; (2) if it is narrower in all aspects, the recapture rule does not apply, but other rejections are possible; (3) if the reissue claim is broader in some aspects, but narrower in others, then: (a) if the reissue claim is as broad as or broader in an aspect germane to a prior art rejection, but narrower in another aspect completely unrelated to the rejection, the recapture rule bars the claim; (b) if the reissue claim is narrower in an aspect germane to prior art rejection, and broader in an aspect unrelated to the rejection, the recapture rule does not bar the claim, but other rejections are possible.

As described above, the Pannu case cited by the Examiner in the Final Office Action is an example of category (3)(a) above. This is because the Federal Circuit in Pannu found that "the reissued claims were not narrowed in any material respect compared with their broadening." 59 U.S.P.Q.2d at 1601. However, it is clear that the present reissue claims are an example of category (2) above since the pending reissue claims are **narrower in all aspects** than the claims of the original application that were amended to obtain allowance of the patent. That is, original claim 1 of the '300 Patent was amended to define a search region having "defined boundary parameters" in relation to the active cell, and it was this amendment that overcame the citation to prior art references that did not define any search region having defined boundaries. On the other hand, the present reissue claims do not attempt to completely remove the requirement of a search region having defined boundary parameters (as was the case in Pannu). Rather, the present reissue claims simply define **alternative** search regions having different boundaries than those enumerated in the issued claims of the '300 patent. Thus, the

present reissue claims do not attempt to recapture the original scope of the application claims.

In sum, the quotation form the Pannu case cited in the Final Office Action is inapplicable in this case since the applicant in Pannu was attempting to "recapture the precise limitation he added to overcome prior art rejections" (i.e., he was attempting to remove the shape limitation of the lens element and thereby return the claim to its original scope). In this case, Applicant is not attempting to return the claims to their original scope (i.e., with no defined boundaries for the search region), but rather is only adding claims to define alternative search regions. Thus, the recapture rule simply does not apply. See Whittaker Corp. v. UNR Industries Inc., 15 U.S.P.Q.2d 1742, 1745 (Fed. Cir. 1990) ("Since we hold that the claims of the reissue patent are narrower in scope than the cancelled original claims of the application that resulted in the '882 patent, the '453 [reissue] patent cannot be held invalid under the recapture rule").

CONCLUSION

As has been repeatedly noted, the recapture rule does not apply to the pending reissue claims for the simple reason that these claims are narrower in all aspects than the claims that were "canceled" from the original application. Indeed, the Examiner has determined that the reissue claims are allowable over the same prior art cited in the original application, thereby **confirming** that the reissue claims are indeed narrower than the originally canceled claims. Thus, it should be clear that the equitable basis for the recapture rule does not apply here since Applicant is not attempting to "recapture" the original scope of the rejected claims.

It is respectfully submitted that the current statement of error is believed to be accurate and to provide a proper basis for reissue, and that claims 1-60 are in condition for immediate allowance. Reversal of the Examiner's rejections of claims 1-60 is therefore respectfully requested.

Date: March 6, 2003

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APPENDIX A

Issued claims of the '300 Patent (not amended by the reissue application):

1. A method for completing a partial data entry for an active cell of a spreadsheet having a plurality of cells defining a grid of rows and columns, comprising the steps of:

invoking an edit mode for said active cell;

identifying a list of completed data items from a search region within said spreadsheet comprising a table of contiguous data-containing cells encompassing said active cell and bordered by empty cells;

defining a partial data entry within said active cell;

identifying a matching completed data item from within said list of completed data items that corresponds to said partial data entry;

displaying said matching completed data item as a suggested completion for said partial data entry;

receiving an acceptance command in association with said suggested completion; and

in response to said acceptance command, storing said partial data entry with said suggested completion within the active cell.

2. The method of claim 1 further comprising the steps of:

receiving a command pertinent to said suggested completion; and operating on said suggested completion in accordance with said command.

3. The method of claim 2, wherein said command is a user response and said operating step further comprises the steps of:

if said response contains a modified partial data item, verifying said suggested completion comprises said modified partial data item;

if said response is a rejection of said suggested completion, displaying said partial data entry; and

if said response is a command to exit said edit mode, clearing said active cell.

4. The method of claim 1, wherein said identifying step further comprises the steps of:

retrieving a plurality of completed data items from said search region within said spreadsheet to form an associated list of completed data items;

filtering said associated list of completed data items to generate a filtered list; and

sorting said filtered list to generate said list of completed data items.

5. The method of claim 4, wherein said search region within said spreadsheet is positionally based on said active cell and said identifying step further comprises the step of selecting a block of contiguous cells, said block being coterminous with said active cell.

6. The method of claim 5, wherein said block is confined to one of said columns of cells within said spreadsheet, said column containing said active cell.

7. The method of claim 5, wherein said block is confined to one of said rows of cells within said spreadsheet, said row containing said active cell.

8. The method of claim 4, wherein said filtering step further comprises the step of removing surplus duplicated completed data items from said associated list of completed data items.

9. The method of claim 4, wherein said filtering step further comprises the steps of:

removing completed data items that are not duplicated in said associated list of completed data items; and

removing surplus duplicated completed data items from said associated list of completed data items.

10. The method of claim 4, wherein each of said completed data items comprises at least one glyph, and said filtering step further comprises the step of removing said completed data items that contain less than N glyphs, where N is an integer greater than one.

11. The method of claim 4, wherein each of said completed data items comprises formatting information, and said filtering step further comprises the step of

removing said completed data items that do not comprise a specific formatting information.

12. The method of claim 1, wherein said identifying step further comprises the steps of:

defining a mask comprising said partial data entry;

searching said list of completed data items for at least one matching data item corresponding to said mask; and

in response to finding at least one said matching data item, equating said suggested completion to said matching data item.

13. The method of claim 1, wherein said identifying step further comprises the steps of:

defining a mask comprising said partial data entry;

searching said list of completed data items for at least one matching data item corresponding to said mask; and

in response to finding more than one of said matching data items, defering identification of said suggested completion.

14. The method of claim 1, wherein said identifying step further comprises the steps of:

defining a mask comprising said partial data entry;

searching said list of completed data items for at least one matching data item corresponding to said mask; and

in response to not finding said matching data item, disabling any further searches of said list of completed data items for said active cell.

15. The method of claim 14 further comprising the step of re-enabling searches of said list of completed data items for said active cell.

16. The method of claim 1, wherein said displaying step further comprises the step of replacing said partial data entry in said active cell with said suggested completion.

17. The method of claim 16, wherein said displaying step further comprises distinguishing a first portion of said suggested completion that comprises said partial data

item from a second portion of said suggested completion that does not comprise said partial data entry.

18. The method of claim 1, further comprising the step of operating on said suggested completion in accordance with said acceptance command to perform a case conversion, said case conversion comprising an adjustment of the case of said partial entry to correspond to the case of said suggested completion.

19. In a program module responsive to input commands for manipulation of data items presented in a plurality of cells, a method to generate a list of completed data items from a search region of cells that are positionally associated with an active cell, comprising the steps of:

identifying a list of completed data items from said search region within a spreadsheet comprising a table of contiguous data-containing cells encompassing said active cell and bordered by empty cells;

generating a sub-list of completed data items from a sub-range of cells that are within said search region encompassing said active cell; and

when said program module is not processing said input commands, expanding said sub-list of completed data items to comprise all of said table of contiguous data-containing cells within said search region.

20. The method of claim 19, wherein said identifying step further comprises the steps of:

selecting all cells that border said active cell and contain completed data items to form a selected cell list; and

adding to said selected cell list all cells that border cells in said selected cell list and contain completed data items.

21. The method of claim 19, wherein said completed data items comprise at least one character and said identifying step further comprises the steps of:

selecting a set of J cells from said search region;

filtering surplus duplicated completed data items from said set of J cells to generate a filtered sub-list; and

sorting said filtered sub-list alphabetically.

22. The method of claim 19, wherein said expanding step further comprises the steps of:

(a) selecting a set of K cells from said search region, said set excluding cells contained in said sub-list;

(b) filtering surplus duplicated completed data items from said set of K cells to generate a filtered set;

(c) merging said filtered set into said sub-list;

(d) sorting said sub-list alphabetically; and

(e) repeating steps (a)-(d) until said sub-list comprises all of said table of contiguous data-containing cells within said search region.

23. In a program module responsive to input commands for manipulation of data items presented in a plurality of cells, a method to automatically complete a partial data entry in said active cell comprising the steps of:

invoking an edit mode for said active cell, said edit mode enabling said active cell to receive said partial data entry and a suggested completion;

identifying a list of completed data items from a search region within a spreadsheet comprising a table of contiguous data-containing cells encompassing said active cell and bordered by empty cells;

filtering surplus duplicated completed data items from said list of completed data items to generate a filtered list;

sorting said filtered list alphabetically to generate a suggestion list of completed data items;

receiving said partial data entry and displaying said partial data entry in said active cell;

searching said suggestion list to identify at least one suggested completion comprising said partial data entry;

in response to identifying only one said suggested completion, replacing said partial data entry in said active cell with said suggested completion;

receiving a response concerning said suggested completion; and

operating on said suggested completion in accordance with said response.

24. The method of claim 23, wherein said identifying step further comprises the steps of:

selecting all cells that border said active cell and contain completed data items to form a selected cell list; and

adding to said selected cell list, all cells that border cells in said selected cell list and contain completed data items.

25. The method of claim 24, wherein said cells are arranged in a grid of rows and columns on multiple work pages and said search region comprises cells from at least one of said work pages, and wherein cells sharing a common row are aligned in the X direction, cells sharing a common column are aligned in the Y direction, and cells sharing a common (X, Y) coordinate but are located on separate work pages are aligned in the Z direction, and any pair of cells border each other if they are adjacent to each other in the X, Y or Z directions.

26. A method for entering data items in a spreadsheet program, comprising the steps of:

selecting an active cell within a search region comprising a table of contiguous data-containing cells encompassing said active cell and bordered by empty cells;

enabling said active cell to receive a partial data entry and a suggested completion;

entering said partial data item in said active cell;

receiving said suggested completion selected from said search region; and

accepting said suggested completion.

27. A computer-readable medium on which is stored a computer program for automatically providing a suggested completion for a partial data entry, said computer program comprising instructions which, when executed by said computer, perform the steps of:

enabling an active cell to receive said partial data entry, said active cell being selected from a plurality of cells in response to placing a display item into a region occupied by said active cell;

identifying a list of completed data items from a search region within a spreadsheet comprising a table of contiguous data-containing cells encompassing said active cell and bordered by empty cells;

receiving said partial data entry and displaying said partial data entry within said active cell;

searching said list of completed data items to identify said suggested completion comprising said partial data entry; and

in response to identifying said suggested completion, displaying said suggested completion within said active cell.

28. The computer-readable medium of claim 27 wherein said computer program further performs the steps of:

receiving a response pertinent to said suggested completion;

if said response is an acceptance of said suggested completion, storing said suggested completion as said data entry;

if said response contains a modified partial data item, searching said list to identify a suggested completion comprising said modified partial data item;

if said response is a rejection of said suggested completion, displaying said partial data item; and

if said response is a command to exit said edit mode, clearing said active cell.

29. The computer-readable medium of claim 27, wherein said search region is positionally based and said identifying step further comprises the steps of:

retrieving a plurality of completed data items from a block of contiguous cells, said block being coterminous with said active cell, and forming said list of completed data items;

removing surplus duplicated completed data items from said list of completed data items; and

sorting said list of completed data items alphabetically, said completed data items containing at least one glyph from a set of glyphs having an alphabetical relationship.

30. The computer-readable medium of claim 27, wherein said searching step further comprises the steps of:

defining a mask comprising said partial data entry;

searching said list of completed data items for at least one matching data item corresponding to said mask;

equating said suggested completion to said matching data item if only one said matching data item is found;

defer identifying said suggested completion if more than one of said matching data items is found; and

disabling any further searches of said list of completed data items for said active cell if a matching data item is not found.

31. The computer-readable medium of claim 27, wherein said displaying step further comprises the step of replacing said partial data entry in said active cell with said suggested completion.

32. The computer-readable medium of claim 27, further comprising the step of operating on said suggested completion in accordance with said acceptance command to perform a case conversion, said case conversion comprising an adjustment of the case of said partial entry to correspond to the case of said suggested completion.

33. A computer system for completing a data entry for an active cell of a spreadsheet, comprising:

a processing unit;

a memory storage device;

an input device coupled to said processing unit for receiving data;

a pixel-based display device coupled to said processing unit for displaying data;

a program module, stored in said memory storage device for providing instructions to said processing unit;

said processing unit, responsive to said instructions of said program module, operative to:

enable an active cell to accept a partial data entry, said active cell being selected from a plurality of cells in response to moving a display item into a region occupied by said active cell;

identifying a list of completed data items from a search region within a spreadsheet comprising a table of contiguous data-containing cells encompassing said active cell and bordered by empty cells;

receive a partial data entry from said input device;

display said partial entry within said active cell on said pixel-based display device;

search said list of completed data items to identify a suggested completion comprising said partial data entry; and

in response to identifying said suggested completion, display said suggested completion within said active cell on said pixel-based display device.

34. The computer system of claim 33, wherein said processing unit is further operative to:

receive a response pertinent to said suggested completion;

if said response is an acceptance of said suggested completion, store said suggested completion in said active cell as said data entry;

if said response contains a modified partial data item, search said list to identify a suggested completion comprising said modified partial data item;

if said response is a rejection of said suggested completion, display said partial data item; and

if said response is a command to exit said edit mode, clear said active cell.

35. The computer system of claim 33, wherein said search region is positionally based and said processing unit is operative to identify a list of completed data items by:

retrieving a plurality of completed data items from a block of contiguous cells, said block being coterminous with said active cell, and forming said list of completed data items;

removing surplus duplicated completed data items from said list of completed data items; and

sorting said list of completed data items alphabetically, said completed data items containing at least one glyph from a set of glyphs having an alphabetical relationship.

36. The computer system of claim 33, wherein said processing unit conducts a search of said list of completed data items by:

defining a mask comprising said partial data entry;

searching said list of completed data items for at least one matching data item corresponding to said mask;

equating said suggested completion to said matching data item if only one said matching data item is found;

deferring to identify said suggested completion if more than one of said matching data items is found; and

disabling any further searches of said list of completed data items for said active cell if a matching data item is not found.

37. The computer system of claim 33, wherein said processing unit displays said suggested completion by replacing said partial data entry in said active cell with said suggested completion.

38. The computer system of claim 33, wherein said response is an acceptance of said suggested completion and said processing unit operates on said suggested completion in accordance with said response by performing a case conversion, said case conversion comprising an adjustment of the case of said partial item to correspond to the case of said suggested completion.

New claims added by reissue application:

39. (Amended) A method for completing a partial data entry for an active cell of a spreadsheet having a plurality of cells defining a grid of rows and columns, the method comprising:

invoking an edit mode for the active cell;

identifying a list of completed data items from a search region within the spreadsheet, said search region including one of (1) cells sharing the same column as the active cell, (2) cells sharing the same row as the active cell, (3) cells within the same column as the active cell and within a range of N cells from the active cell, wherein N is an integer greater than zero, and (4) cells within the same row as the active cell and within a range of N cells from the active cell, wherein N is an integer greater than zero;

defining a partial data entry within the active cell;

identifying a matching completed data item from within said list of completed data items that corresponds to said partial data entry;

displaying said matching completed data item as a suggested completion command for said partial data entry;

receiving an acceptance command in association with said suggested completion; and

in response to said acceptance command, storing said partial data entry with said suggested completion within the active cell.

40. The method of claim 39, further comprising:

receiving a command pertinent to said suggested completion; and

operating on said suggested completion in accordance with said command.

41. The method of claim 40, wherein said command is a user response and said operating operation further comprises:

if said response contains a modified partial data item, verifying said suggested completion comprises said modified partial data item;

if said response is a rejection of said suggested completion, displaying said partial entry; and

if said response is a command to exit said edit mode, clearing the active cell.

42. The method of claim 39, wherein said identifying a list of completed data items operation further comprises:

retrieving a plurality of completed data items from said search region within the spreadsheet to form an associated list of completed data items;

filtering said associated list of completed data items to generate a filtered list; and

sorting said filtered list to generate said list of completed data items.

43. The method of claim 42, wherein said search region within the spreadsheet is positionally based on the active cell and said identifying a list of completed data items operation further comprises selecting a block of contiguous cells, said block being coterminous with the active cell.

44. The method of claim 43, wherein said block is confined to one of the columns of cells within the spreadsheet, said column containing the active cell.

45. The method of claim 43, wherein said block is confined to one of the rows of cells within the spreadsheet, said row containing the active cell.

46. The method of claim 42, wherein said filtering operation further comprises removing surplus duplicated completed data items from said associated list of completed data items.

47. The method of claim 42, wherein said filtering operation further comprises:

removing completed data items that are not duplicated in said associated list of completed data items; and

removing surplus duplicated completed data items from said associated list of completed data items.

48. The method of claim 42, wherein each of said completed data items comprises at least one glyph, and said filtering operation further comprises removing completed data items that contain less than N glyphs, where is an integer greater than one.

49. The method of claim 42, wherein said completed data items comprises formatting information, and said filtering operation further comprises removing completed data items that do not comprise a specific formatting information.

50. The method of claim 39, wherein said identifying a list of completed data items operation further comprises:

defining a mask comprising said partial data entry;

searching said list of completed data items for at least one matching data item corresponding to said mask; and

in response to finding at least one said matching data item, equating said suggested completion to said matching data item.

51. The method of claim 39, wherein said identifying a list of completed data items operation further comprises:

defining a mask comprising said partial data entry;

searching said list of completed data items for at least one matching data item corresponding to said mask; and

in response to finding more than one of said matching data items, deferring identification of said suggested completion.

52. The method of claim 39, wherein said identifying a list of completed data items operation further comprises:

defining a mask comprising said partial data entry;

searching said list of completed data items for at least one matching data item corresponding to said mask; and

in response to not finding said matching data item, disabling any further searches of said list of completed data items for the active cell.

53. The method of claim 52, further comprising re-enabling searches of said list of completed data items for the active cell.

54. The method of claim 39, wherein said displaying operation further comprises replacing said partial data entry in the active cell with said suggested completion.

55. The method of claim 42, wherein said displaying operation further comprises distinguishing a first portion of said suggested completion that comprises said partial data item from a second portion of said suggested completion that does not comprise said partial data entry.

56. The method of claim 39, further comprising operating on said suggested completion in accordance with said acceptance command to perform a case conversion,

said case conversion comprising an adjustment of the case of said partial entry to correspond to the case of said suggested completion.

57. A method for completing a partial data entry for an active cell of a spreadsheet having a plurality of cells defining a grid of rows and columns, the method comprising:

invoking an edit mode for the active cell;

identifying a list of completed data items from a search region within the spreadsheet, said search region including cells within the same column as the active cell;

defining a partial data entry within the active cell;

identifying a matching completed data item from within said list of completed data items that corresponds to said partial data entry;

displaying said matching completed data item as a suggested completion command for said partial data entry;

receiving an acceptance command in association with said suggested completion; and

in response to said acceptance command, storing said partial data entry with said suggested completion within the active cell.

58. (Amended) The method of claim 57, wherein said search region is further limited to a range of N cells from the active cell, wherein N is an integer greater than zero.

59. A method for completing a partial data entry for an active cell of a spreadsheet having a plurality of cells defining a grid of rows and columns, the method comprising:

invoking an edit mode for the active cell;

identifying a list of completed data items from a search region within the spreadsheet, said search region including cells within the same row as the active cell;

defining a partial data entry within the active cell;

identifying a matching completed data item from within said list of completed data items that corresponds to said partial data entry;

displaying said matching completed data item as a suggested completion command for said partial data entry;

receiving an acceptance command in association with said suggested completion; and

in response to said acceptance command, storing said partial data entry with said suggested completion within the active cell.

60. (Twice Amended) The method of claim 59, wherein said search region is further limited to a range of N cells from the active cell, wherein N is an integer greater than zero.